

Claims

- [c1] 1.A model based controller system, comprising:
at least one model including at least one process step;
at least one controller that generates at least one control command;
at least one component responsive to the at least one control command,
wherein said at least one component receives the at least one control command
from said at least one controller, and wherein said at least one component
sends at least one component information element to said at least one
controller; and
at least one communicative coordination that communicatively coordinates said
at least one model with said at least one controller, wherein the at least one
control command is generated in accordance with the at least one process step,
and wherein at least one of the at least one process step is varied in accordance
with the at least one component information element.
- [c2] [c]
2.The system of Claim 1, wherein said coordination of said at least one model
with said at least one controller comprises a data flow control between said at
least one model and said at least one controller.
- [c3] [c]
3.The system of Claim 1, wherein said controller is adapted to control at least
two of said at least one component.
- [c4] [c]
4.The system of Claim 1, wherein said at least one model comprises a
development mode.
- [c5] [c]
5.The system of Claim 1, wherein said at least one model comprises an
execution mode.
- [c6] [c]
6.The system of Claim 1, further comprising at least one recipe generator
communicatively coupled to said at least one model.

- | | |
|-------|---|
| [c7] | [c] |
| | 7.The system of Claim 1, further comprising at least one server being communicatively coupled to said controller. |
| [c8] | [c] |
| | 8.The system of Claim 1, further comprising at least one server being communicatively coupled to said model. |
| [c9] | [c] |
| | 9.The system of Claim 1, wherein said coordination comprises a server. |
| [c10] | [c] |
| | 10.The system of Claim 5, further comprising computing resources for real-time control in said execution mode. |
| [c11] | [c] |
| | 11.The system of Claim 1, wherein said component comprises at least one operative component selected from the group consisting of a valve, a sensor, and a motor. |
| [c12] | [c] |
| | 12.The system of Claim 1, wherein said controller comprises at least one programmable logic controller. |
| [c13] | [c] |
| | 13.The system of Claim 12, wherein said coordination comprises code for enabling communications. |
| [c14] | [c] |
| | 14.The system of Claim 13, wherein said coordination comprises code for modifying at least one recipe associated with said controller. |
| [c15] | [c] |
| | 15.The system of Claim 14, wherein said code is responsive to said at least one model. |
| [c16] | [c] |

16.The system of Claim 4, wherein said coordination comprises code for creating at least one recipe associated with said model in said development environment.

[c17] [c]

17.The system of Claim 16, wherein said code is responsive to said at least one model in an execution environment.

[c18] [c]

18.The system of Claim 1, further comprising at least one interface for presenting information indicative of said at least one component and said at least one model to a user.

[c19] [c]

19.The system of Claim 18, further comprising code for enabling said user to use said interface to modify said at least one model.

[c20] [c]

20.The system of Claim 19, further comprising code for modifying said at least one model.

[c21] [c]

21.The system of Claim 20, wherein said code for modifying said at least one model is adapted to enable a user to view and edit said at least one model being operated by said at least one controller.

[c22] [c]

22.The system of Claim 21, further comprising at least one component browser for presenting information indicative of said at least component to enable user selection of said at least one component by said code for modifying said at least one model.

[c23] [c]

23.The system of Claim 22, wherein said at least one component browser comprises code for presenting information indicative of said at least one component in a hierarchy.

- [c24] [c]
24.The system of Claim 23, wherein said at least one component browser comprises code for information indicative of operation of said at least one controller by said at least one model.
- [c25] [c]
25.The system of Claim 24, further comprising code for simulating operation of said at least one controller.
- [c26] [c]
26.The system of Claim 25, wherein said code for simulating comprises data for simulating said at least one component.
- [c27] [c]
27.The system of Claim 26, wherein said simulator outputs code indicative of said at least one model.
- [c28] [c]
28.The system of Claim 1, wherein said at least one component comprises at least one simulated component.
- [c29] [c]
29.A method of controlling a process, using a model based controller system, comprising:
generating at least one model, including at least one process step;
issuing at least one control command from the at least one controller;
receiving, by at least one component, of the at least one control command from said at least one controller;
sending by the at least one component, responsively to the at least one control command, of at least one component information element to the at least one controller; and
communicatively coordinating the at least one model with the at least one controller, wherein the at least one control command is generated in accordance with the at least one process step, and wherein the at least one process step is varied in accordance with the at least one component information element.

[c30]

[c]

30.A computer-readable medium carrying thereon one or more sequences of instructions for controlling a physical process, wherein execution of the one or more sequences of instructions by one or more processors causes the one or more processors to perform the steps of:

generating at least one model, including at least one process step;

issuing at least one control command from the at least one controller;

receiving, by at least one component, of the at least one control command from said at least one controller;

sending by the at least one component, responsively to the at least one control command, of at least one component information element to the at least one controller; and

communicatively coordinating the at least one model with the at least one controller, wherein the at least one control command is generated in accordance with the at least one process step, and wherein the at least one process step is varied in accordance with the at least one component information element.